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From: ELog@ns.kamioka.awa.tohoku.ac.jp
Subject: New ELOG entry: 860nm LED test for 4pi system [KamLAND]
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X-Elog-URL: <http://www.kamioka.awa.tohoku.ac.jp:8081/KamLAND/705>
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Original-recipient: rfc822;kmheeger@imape.lbl.gov

A new entry has been submitted on ns.kamioka.awa.tohoku.ac.jp

Logbook : KamLAND
Author : Kengo Nakamura as kengo from dhcp6-176.rcns.awa.tohoku.ac.jp
Type : Calibration source deployment | Test run
Category : Hardware
Subject : 860nm LED test for 4pi system

Logbook URL : <http://www.kamioka.awa.tohoku.ac.jp:8081/KamLAND/705>

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860nm LED was sent to Mozumi from Hurb. This is a candidate LED for 4pi system. It was deployed to see if it is seen by IR camera/PMTs in the detector.

Procedures and Result

1. Check the LED with IR camera in the G.B.

The circuit for the LED was sent from Hurb. The pulse is about 500msec? and 1Hz? Since the diffusion ball was not used, the light has directionality. When it is deployed, the light direction is ---> bottom.

It was seen by the camera in the G.B. This camera sees the LED from back. (Opposit direction of the light emission.)

2. HV OFF

3. Deploy the LED

4. Try to see the LED with IR cameras in the detector.

Although the LED light is week, two camera can see it.

Camera named M5; looking up the detector from the bottom.

Camera named F4; looking at the balloon bottom from side.

M5 can see the LED at $-3.7 < Z < 0$ [m].

The light becomes weaker and weaker as Z increases, because of attenuation.

For $Z < -3.7$, the LED is out of view of the camera.

For $Z > 0$, the LED light is too week to see.

F4 can see the LED but the light is already very week.

5. A few PMTs HV on and checked the discriminator rate.

Significant rate changes were not observed with/without the LED.

6. All PMTs HV ON and take a BG run (3737).

7. Undeployed the LED and take a BG run (3738).

No big differences between Run 3737 and Run 3738 was observed.

Please look at the attached figures. The file has two pages, one for 17inch and the other one for 20inch PMTs.

Upper left; Discriminator rate for all tubes Run3738. (Hz)
You see the typical rate. And individual tube has a few 100 Hz of fluctuation.

Upper right; Rate(Run3737)-Rate(Run3738)

Lower; Z dependence of Rate(Run3737)-Rate(Run3738)

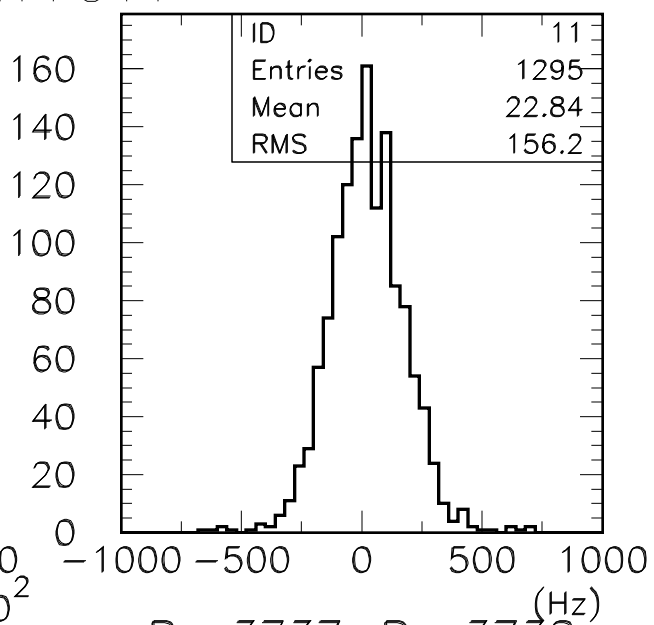
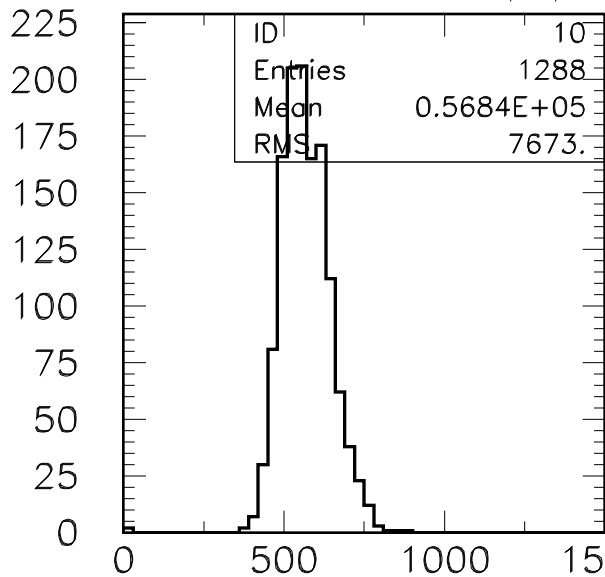
The discriminator rate with LED deployed is slightly higher for both types of PMT, it is still within the fluctuation.

Evgueni and Kengo



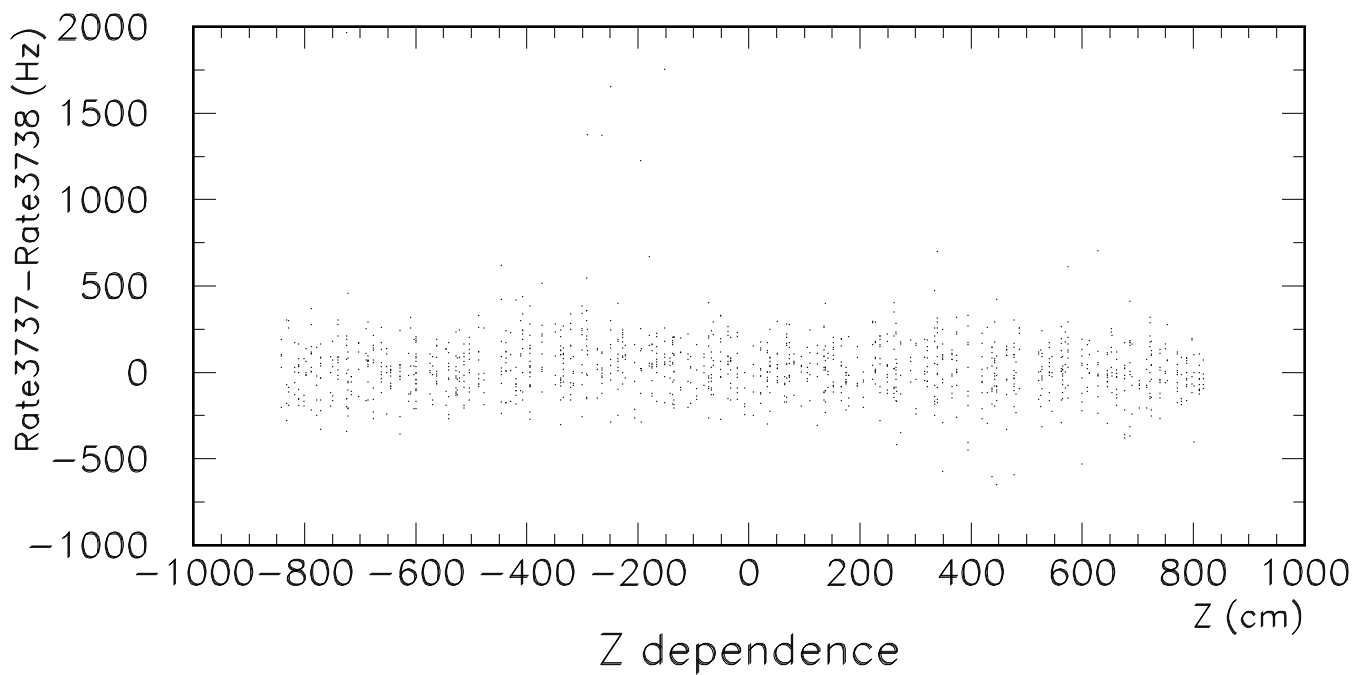
paw.ps

17 inch

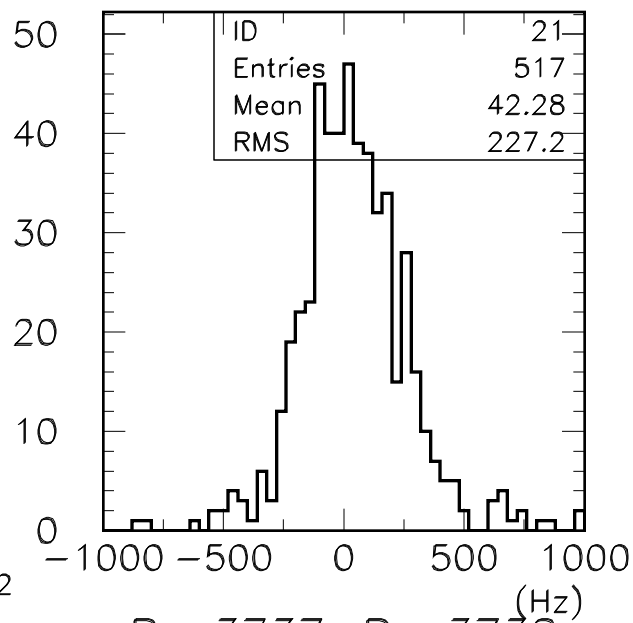
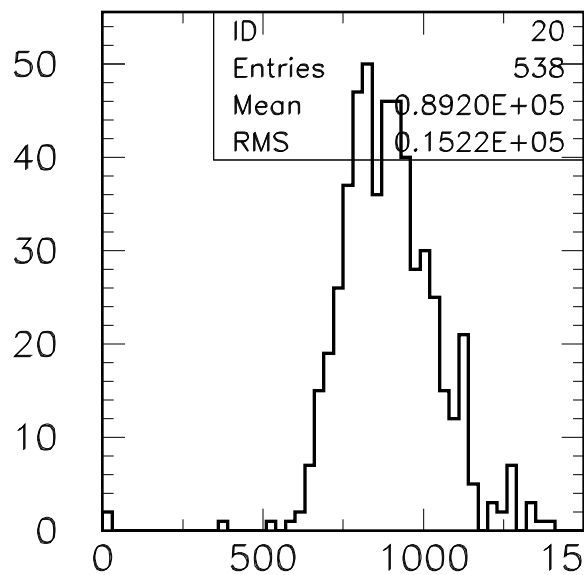


Rate Run3738

Run3737 - Run3738



20 inch



Rate Run3738

Run3737-Run3738

